AMENDMENTS TO THE CLAIMS:

Please amend claims 20, 21, 24, and 26, as indicated below. This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1.-19. (Canceled)

20. (Currently Amended) A method for amplifying an optical signal having frequency in a signal frequency range, comprising:

introducing said optical signal respectively into at least a first and a second optical path disposed in series with each other, each comprising a Raman-active material having a predetermined Raman shift;

introducing into said first optical path a first pump portion, said first pump portion including a first group of pump frequencies between a first minimum pump frequency and a first maximum pump frequency; and

introducing into said second optical path a second pump portion, said second pump portion including a second group of pump frequencies between a second minimum pump frequency and a second maximum pump frequency, a whole of said first and second group of pump frequencies extending over a pump frequency range having a width of at least 40% of said Raman shift;

at least a portion of said first group of pump frequencies being excluded from said second group of pump frequencies and at least a portion of said second group of pump frequencies being excluded from said first group of pump frequencies;

said steps of introducing said first and second pump portions into said first and second optical paths being performed such that a residual of said second pump portion entering into said first optical path has a power lower by at least 10 dB than said first pump portion, and such that a residual of said first pump portion entering into said second optical path has a power lower by at least 10 dB than said second pump portion;

said first minimum pump frequency and said first maximum pump frequency differing from each other by at most 70% of said Raman shift; and

said second minimum pump frequency and said second maximum pump frequency differing from each other by at most 70% of said Raman shift.

21. (Currently Amended) The method according to claim 20, wherein the steps of introducing said first and second pump portions into said first and second optical paths are performed such that a residual of said second pump portion entering into said first optical path has a power lower by at least 13 dB than said first pump portion, and such that a residual of said first pump portion entering into said second optical path has a power lower by at least 13 dB than said second pump portion.

22. (Previously Presented) The method according to claim 20, wherein said first minimum pump frequency and said first maximum pump frequency differ from each other by at most 50% of said Raman shift, and said second minimum pump frequency and said second maximum pump frequency differ from each other by at most 50% of said Raman shift.

23. (Previously Presented) The method according to claim 20, wherein said pump frequency range has a width of at least 50% of said Raman shift.

24. (Currently Amended) The method according to claim 20, wherein said first and second group of pump frequencies do not overlap each other.

25. (Previously Presented) The method according to claim 20, wherein said first minimum and said first maximum pump frequencies define a first pump frequency range and said second minimum and said second maximum pump frequencies define a second pump frequency range, at least one of said first and second pump frequency ranges having a width of at least 20% of said Raman shift.

26. (Currently Amended) The method according to claim 20, wherein said first group of pump frequencies is adapted for Raman amplifying a first portion of said optical signal, said second group of pump frequencies is adapted for Raman amplifying a second portion of said optical signal, the first portion of optical signal having a greater attenuation versus wavelength in said Raman-active material than the second portion of optical signal.

27. (Previously Presented) The method according to claim 20, further comprising a step of providing said first and said second pump portions by a plurality of pump lasers, said plurality of pump lasers having an overall variation of pump power emission of at most 50% of an average pump power emission.

28. (Withdrawn) A Raman amplifier adapted for amplifying an optical signal having frequency in a signal frequency range comprising at least a first and a second optical path disposed in series with each other, each comprising a Raman-active material having a predetermined Raman shift, said amplifier comprising:

a first pump source connected to said first optical path, said first pump source being adapted for emitting and coupling into said first optical path a first pump radiation including a first group of pump frequencies between a first minimum pump frequency and a first maximum pump frequency; and

a second pump source connected to said second optical path, said second pump source being adapted for emitting and coupling into said second optical path a second pump radiation including a second group of pump frequencies between a second minimum pump frequency and a second maximum pump frequency, a whole of said first and second group of frequencies extending over a pump frequency range having a width of at least 40% of said Raman shift;

at least a portion of said first group of frequencies being excluded from said second group of frequencies and at least a portion of said second group of frequencies being excluded from said first group of frequencies;

the couplings between said first and second pump sources and said first and second optical paths being such that a residual of said second pump radiation coupled into said first optical path has a power lower by 10 dB than said first pump radiation, and such that a residual of said first pump radiation coupled into said second optical path has a power lower by 10 dB than said second pump radiation;

said first minimum pump frequency and said first maximum pump frequency differing form each other by at most 70% of said Raman shift; and

said second minimum pump frequency and said second maximum pump frequency differing from each other by at most 70% of said Raman shift.

29. (Withdrawn) The Raman amplifier according to claim 28, wherein the couplings between said first and second pump sources and said first and second optical paths are such that a residual of said second pump radiation coupled into said first optical path has a power lower by 13 dB than said first pump radiation, and such that a residual of said first pump radiation coupled into said second optical path has a power lower by 13 dB than said second pump radiation.

30. (Withdrawn) The Raman amplifier according to claim 28, wherein said first minimum pump frequency and said first maximum pump frequency differ from each other by at most 50% of said Raman shift, and said second minimum pump frequency and said second maximum pump frequency differ from each other by at most 50% of said Raman shift.

31. (Withdrawn) The Raman amplifier according to claim 28, wherein said pump frequency range has a width of at least 50% of said Raman shift.

32. (Withdrawn) The Raman amplifier according to claim 28, wherein said first and second group of frequencies do not overlap each other.

33. (Withdrawn) The Raman amplifier according to claim 28, wherein said first minimum and said first maximum pump frequencies define a first pump frequency range and said second minimum and said second maximum pump frequencies define a second pump

frequency range, at least one of said first and second pump frequency ranges having a width of at least 20% of said Raman shift.

34. (Withdrawn) The Raman amplifier according to claim 28, wherein said first group of frequencies is adapted for Raman amplifying a first portion of said optical signal, said second group of wavelengths is adapted for Raman amplifying a second portion of said optical signal, the first portion of optical signal having a greater attenuation versus wavelength in said Raman-active material than the second portion of optical signal.

35. (Withdrawn) The Raman amplifier according to claim 28, wherein said first and said second pump sources comprise a plurality of pump lasers, said plurality of pump lasers having an overall variation of pump power emission of at most 50% of an average pump power emission.

36. (Withdrawn) An optical system comprising at least one optical line, said optical line including at least one optical fiber and at least one Raman amplifier connected to said optical fiber, said Raman amplifier adapted for amplifying an optical signal having frequency in a signal frequency range comprising at least a first and a second optical paths disposed in series with each other, each comprising a Raman-active material having a predetermined Raman shift, said amplifier comprising:

a first pump source connected to said first optical path, said first pump source being adapted for emitting and coupling into said first optical path a first pump radiation including a first group of pump frequencies between a first minimum pump frequency and a first maximum pump frequency; and

a second pump source connected to said second optical path, said second pump source being adapted for emitting and coupling into said second optical path a second pump radiation including a second group of pump frequencies between a second minimum pump frequency and a second maximum pump frequency, a whole of said first and second group of frequencies extending over a pump frequency range having a width of at least 40% of said Raman shift;

at least a portion of said first group of frequencies being excluded from said second group of frequencies and at least a portion of said second group of frequencies being excluded from said first group of frequencies;

the couplings between said first and second pump sources and said first and second optical paths being such that a residual of said second pump radiation coupled into said first optical path has a power lower by 10 dB than said first pump radiation, and such that a residual of said first pump radiation coupled into said second optical path has a power lower by 10 dB than said second pump radiation;

said first minimum pump frequency and said first maximum pump frequency differing form each other by at most 70% of said Raman shift; and

said second minimum pump frequency and said second maximum pump frequency differing from each other by at most 70% of said Raman shift.

37. (Withdrawn) An optical system according to claim 36, further comprising a transmitting station including a plurality of transmitters adapted for emitting a respective plurality of optical channels, each having a respective wavelength, said transmitting station being connected to a first end of said optical line.

38. (Withdrawn) An optical system according to claim 37, further comprising a receiving station including a plurality of receivers adapted to discriminate information carried by said optical channels, said receiving station being connected to a second end of said optical line.